

**SUPPORT AND MANAGEMENT FOR THE PROJECT:
“EFFECTS OF THE CHORNOBYL ACCIDENT ON THYROID CANCER AND LEUKEMIA”
CONTRACT BETWEEN NATIONAL CANCER INSTITUTE AND THE TRUSTEES OF
COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK
QUARTERLY PROGRESS REPORT, JANUARY 1- MARCH 31, 2001**

1. Introduction

This report covers activities carried out during the second quarter of the fourth year of the contract between the National Cancer Institute (NCI) and Columbia University for the support of thyroid cancer studies in children in Belarus and Ukraine and leukemia in clean-up workers in Ukraine. Relevant scientific activities are detailed in Sections 2 and 3. Trips by Columbia investigators and consultants made in connection with the studies are summarized in Section 4. Administrative activities are detailed in Section 5 and an outline of projected activities for the third quarter of the fourth year is given in Section 6.

2. Summary of Progress in the Thyroid Study

The primary focus in the thyroid study during the quarter was the completion of the first round of screening examinations. This was completed in both Belarus and Ukraine by the end of March, with a total of approximately 11,500 subjects having been enrolled in Belarus and 13,200 in Ukraine. Thus, the target size of 24,000 for the cohort for both countries combined has been achieved and slightly exceeded.

The data processing for data collected during the first round of screenings is progressing satisfactorily. It appears to be essentially up to date in Belarus, and it is anticipated that it will be complete in Ukraine in approximately two months time. It will be essential to monitor the progress, in particular, the final diagnostic summary for study subjects which is still somewhat lagging in Ukraine.

Another major activity during this quarter has been preparation for the second round of screenings. This will start in Belarus on April 1, and start in Ukraine approximately half way through March.

An emphasis has been placed on developing new forms for the study, which essentially is the same for both countries. This will facilitate the combining of the data from the two countries for an eventual analysis. A comprehensive training session was held in Kiev from February 5 to 9, 2001 and in Minsk from February 10 to 15, 2001.

A very important component of this training was the conduct of a seminar in both countries by Dr. Richard Sohn, Associate Dean for Research Administration at Columbia University, on the principles and ethics of dealing with human subjects in the studies. This was mandated by the U.S. government for all scientists participating in government-funded research. Dr. Sohn has developed and conducted such courses at Columbia for some time, and his seminars were attended by all scientists participating in the thyroid studies, and also in Kiev, by scientists participating in the leukemia study. In addition, several guest scientists involved in other U.S. studies also attended. These seminars appear to complete the government's requirement for both the thyroid and leukemia studies.

Other topics in the training workshops included questionnaire administration; review of the new operations manual; an introduction of the new questionnaire including, 'in particular, the new dosimetry questionnaire. These latter topics were taught by both NCI and Columbia personnel.

A joint meeting of dosimetrists and epidemiologists from Belarus, Ukraine, Russia and the U.S. was held in Minsk on March 12 to 16, 2001. The primary focus of this meeting was to discuss the evaluation of the new questionnaire, how it will be handled logistically by the epidemiologists and how the value of the questionnaire data will be evaluated. A detailed plan of evaluation was developed which should be completed by the end of June.

Initial results from the second screening round in Ukraine although based on a small number of individuals, suggested that the participation rates could be satisfactorily high (in the order of 90% to 95%). An important issue for the second round of screening will be to maintain a high response rate, and focus on quality control procedures for ensuring that the changes introduced in the second

screening are satisfactorily followed.

Columbia personnel also contributed to the completion of the new Thyroid Protocol, in particular, including a detailed re-estimation of power.

2.1 Other Activities Include:

Dr. R McConnell:

- A) Constructive criticism of the Workshop on Urine Iodine summary at the request of Dr. Robbins.
- B) Review and editing of the Belarusian Scientific Protocol at the request of Dr. Beebe.
- C) Continued work on the manuscript that will become our project's "first paper".

Dr. J. Robbins:

- A) Participated in CRU staff meetings in Rockville when possible, and the COP meetings on January 8 and March 5, 2001.
- B) Collaborated with Drs. McConnell, and Fink, and co-authors in Minsk and Kiev, in the preparation of abstracts submitted for the Annual Meeting of the European Thyroid Association to be held in Warsaw, August 25-29, 2001.
- C) Prepared a summary of the Workshop on Urine Iodine that was held at Rockville on November 17, 2000, and submitted it for publication in a special issue of THYROID that is scheduled for May 2001.

Dr. E. Greenebaum:

- A) Participated in preparation of Abstracts submitted to various meetings as per reports submitted by Drs. McConnell, Robbins, and Fink..

Dr. D. Fink:

- A) Completed the written analysis of the Ukrainian Normal Range Study.

- B) Prepared materials related to Bloodborne pathogens for the training sessions in Minsk and Kiev. Reviewed the operations manuals and forms
- C) Researched the selection of safety needleholders and sharps containers for use in Belarus and Ukraine.
- D) Assisted Sally Hodgson in reviewing supply lists and estimating supply needs.
- E) Discussed with Brahms recent changes in the Brahms assays and assessed their impact on the project.
- F) Participated in the review and modification of the operations manuals, the protocols, the project forms, the methods paper, and the ETA abstracts.

3. Summary of Progress in the Leukemia Study

During this quarter, the primary activity of the leukemia study has been the collection of data for the leukemia registry. This has started in all five oblasts and Kiev City, and is progressing on schedule, with the completion date estimated for the end of June 2001. Visits have been paid by Columbia staff and consultants together with NCI personnel to several of the institutions collecting data and these on spot inspections seem to show that appropriate procedures were being followed.

The quality control sample has been extracted for all data collected, and manual comparisons suggest that the quality of the data is high with a very low error rate both in terms of extracting data, and of completing forms for all appropriate cases.

A satisfactory data entry system has been developed for the leukemia data, though as yet, no satisfactory computerized system for conducting quality control comparisons, general checking and editing of the data has been completed. In several sessions the necessary processes have been discussed in detail with the data manager, but as yet do not appear to have been satisfactorily implemented. This will be a high priority item for the next quarter.

With regard to dosimetry, the main focus on the study has been conducting interviews with 50

subjects with satisfactory EPR measurements (no evidence of dental x-rays). A substantial number have been completed and comparisons will shortly be made between the EPR doses and doses estimated from the questionnaire. Progress has also been made in expanding the current questionnaire to elicit extra information, informing appropriate databases for the estimation of doses by analytic dose reconstruction from the questionnaire.

A detailed timetable for the rest of the year has been agreed to. It is anticipated that record linkage between the cohort file and the leukemia registry will be conducted in September, following an internal linkage of the registry data. Cases and controls should essentially be identified by October, when it is planned to hold a training workshop for those who will be involved in the tracing of cases and controls and the interviewing procedures. Given this schedule, it is reasonable to anticipate that full-scale interviewing should start early in 2002, as per the timetable in the original protocol. It has also been agreed that Yuri Byelyaev will come to Columbia for the month of August both to learn techniques in record linkage, and to assist in the development of the specific software to be used for the leukemia study.

3.1 Other Activities Include:

Dr. S. Finch:

- A) During the first quarter of this year Dr. Finch completed and submitted to the American Journal of Hematology a paper in collaboration with several Ukrainian colleagues concerning the results of an international panel's confirmation of cases diagnosed with leukemia in Ukraine.
- B) Wrote a summary paper on the overall results of Phase I of the leukemia study, a draft of which has been distributed to all former members of the project's Working Committee for comment.
- C) Another accomplishment was completion of a draft of the hematology section of the leukemia program's operations manual. This draft has been distributed to both the US and Ukrainian investigators on the project for their comments, revisions and possible corrections.

- D) Preparations also were made during the first quarter of 2001 for the next proposed visit to RCRM during the week of 5/20/01.

4. Trips by Columbia Investigators and Consultants (January 1 to March 31, 2001)

These trips are summarized in the table below. Trip reports have been submitted to NCI and brief summaries of these reports are included in Section 2.1,

| Name | Place | Study | Date |
|-------------|--------------|-------------------|------------------|
| Finch | Kiev | Leukemia | Feb. 4-9, 2001 |
| Howe | Kiev/Minsk | Thyroid, leukemia | Feb. 3-13, 2001 |
| Fink | Kiev/Minsk | Thyroid | Feb. 7-15, 2001 |
| McConnell | Kiev/Minsk | Thyroid | Feb. 7-15, 2001 |
| Robbins | Kiev/Minsk | Thyroid | Feb. 7-15, 2001 |
| Zablotska | Kiev/Minsk | Thyroid, leukemia | Feb. 5-15, 2001 |
| sohn | Kiev/Minsk | Thyroid, leukemia | Feb. 7-15, 2001 |
| Greenebaum | Minsk | Thyroid | Feb. 10-15, 2001 |
| Howe | Kiev/Minsk | Thyroid, leukemia | Mar. 12-16, 2001 |

4.1 Summaries of Trip Reports:

Dr. S. Finch, Kiev, Leukemia (February 4-9, 2001):

Activities Report by S. C. Finch for period January - March, 2001

Dr. Finch visited the Research Center for Radiation Medicine (RCRM) from 02/04/01 to 02/09/01 in connection with the Leukemia Study. A morning meeting during the first day (02/05/01) with most of the members of the leukemia project was concerned with the collection, quality control and entry of data into the Leukemia Registry. Drs. Howe and Thomas were the principal leaders of the discussion. On the afternoon of 02/05/01 and during most of 02/07 and 02/08 Dr. Finch met with Drs. Klimenko and Dyagil and sometimes with Drs. Romanenko, Bazyka, Ledoshchuk and Gudzenko about hematology concerns for the project. Focus in these discussions was on leukemia terminology, ascertainment of cases of leukemia, myelodysplasia and multiple myeloma, suitable forms for data

collection, the writing of an operations manual, the publication of a paper concerning the hematology slide review, the collection of buccal cells and equipment and supplies which may be necessary for conduct of the international hematology slide review. Discussions also were held with Dr. Maria Pilinskaya on the afternoon of 02/08 concerning her need for certain supplies and communication with Dr. McFee concerning publication of their paper which concerns radiation dose estimates for a group of clean-up workers based on cytogenetic and electron paramagnetic resonance studies.

Dr. G R. Howe, Kiev and Minsk, Leukemia and Thyroid Studies (February 5-13, 2001):

The primary purpose of this visit was to participate in the training courses organized for the start of the second screening cycle in both countries. The courses were first taught in Kiev from February 5 to 9, 2001, and then repeated in Minsk from February 10 to 15, 2001.

The courses in which Dr. Howe was involved were: a) a general training session for all participants on the principles and practice of administering questionnaires, particularly the new questionnaires and similar forms, and treating study subjects to ensure maximum collaboration and participation; b) for those who will be involved in administering new dosimetry questionnaires; again, focusing on the principles of administering such questionnaires and, in particular, dealing with the dosimetry questionnaire; methods involved both for presentations, practice interviews with simulated subjects and group discussions relating to the questionnaire itself, and techniques for administering it.

The courses appeared to be received by both the Belarusian and Ukrainian participants with enthusiasm and appeared to have achieved their basic purpose. However, it will be essential in the future to reinforce the procedures, which were taught, and, in particular, to conduct similar exercises before the start of each screening cycle.

Dr. D. Fink, Kiev and Minsk, Thyroid (February 7-15, 2001):

Kiev - The main purpose of the trip, training for the Ukrainian staff in the forms, operations manual, and blood borne pathogens was accomplished in a satisfactory fashion. The staff from Dr. Epshtein's

and Dr. Kravchenko's laboratories were present as well as the phlebotomists from the fixed and mobile teams.

A separate discussion with Dr. Markov, Dr. Epshtein, and the laboratory staff revealed that there continue to be gaps in their understanding of the implementation of Levey-Jennings techniques for quality control. In particular, Dr. Markov used visual estimates to reset the QC limits instead of calculating the values based on observed laboratory QC Performance.

Dr. Fink made several recommendations:

1. Quality control limits should be established based on observed laboratory QC values, not from manufacturer's package inserts.
2. Needle holders with built in safety devices should be selected and introduced to the project.
3. Alternative instruments to perform ionized calcium should be investigated.

Minsk - The main purpose of the trip, training for the Belarusian staff in the forms, operations manual, and bloodborne pathogens was accomplished in a satisfactory fashion. The staff from Dr. Petrenko's laboratory as well as the phlebotomists and ultrasonography nurses (who sometimes fill in for specimen processing or phlebotomy) from the fixed and mobile teams attended the training. The discussions were well received and quite comprehensive. As part of the program, a visit was made to the phlebotomy station in the dispensary where it was learned that there are not adequate containers for disposing of needles and the staff is decontaminating and reusing gloves; these procedures are not acceptable.

Dr. Fink made several recommendations:

1. It was strongly recommended that the supply of gloves be increased, particularly small and medium, and that ordering hard-sided needle containers on a regular basis should commence. The reuse of gloves and the transfer of the needles should be discontinued.
2. Needle holders with built in safety devices should be selected and introduced to the project.

3. Procedures for handling, reporting, and following up on spills or accidents in the laboratory should be written up and a spill kit prepared. This could be modeled after what is available in the phlebotomy area.
4. On his next visit, Dr. Fink will review needle-handling procedures by the mobile team and in Gomel.

Dr. R. McConnell, Kiev and Minsk, Thyroid (February 7-15, 2001):

A large portion of this quarter's efforts was consumed by the preparation for, execution of, and recovery from retraining of the clinical staff of the Belarusian-Ukrainian-US Thyroid Project that was held in Kiev and Minsk from 7 February- 15 February 2001. The major purpose of these exercises was to review changes to the Operations Manuals, Clinical Forms, and Instructions prior to beginning the second round of screening on 1 March 2001.

All of January and early February were given over to an in-depth review of screening procedures and rewriting both the forms and their instructions, with the exception of the Endocrine Summary Form, which was completed after the visit. Drs. McConnell, Robbins, and Thomas collaborated on this project, making an earnest attempt to make the forms nearly the same for both arms of the study, with variations allowed for local peculiarities and preferences. By adopting identical clinical criteria and ensuring that they are uniformly applied, we expect to limit bias in the screening process.

Drs. McConnell and Robbins co-chaired the retraining sessions, with assistance from Dr. Oliynik in Kiev and Dr. Polyanskaya in Minsk. A complete list of the participants is attached as Appendix A. The clinicians of both countries showed enthusiasm for these exercises and discussions were both intelligent and constructive. A major compromise was reached by allowing the Ukrainians to record structures smaller than 5 mm in diameter on ultrasound without calling them nodules. By referring to them as "focal lesions", we were able to be sure that they would be entered into the database and could be compared to lesions of similar size counted as nodules by the Belarusians. A major disappointment was the failure to agree upon consistent criteria for nodule management in patients

not sent to surgery. The Belarusian criteria, listed as Appendix B, were not acceptable to our Ukrainian colleagues.

Drs. McConnell, Fink, and, Robbins spent the month of March writing abstracts for submission to the August 2001 ETA Meeting. These concerned the utility of serum thyroglobulin in screening for thyroid nodules and cancer and are attached as Appendices C and D.

Other activities for this period included constructive criticism of the Workshop on Urine Iodine summary at the request of Dr. Robbins, review and editing of the Belarusian Scientific Protocol at the request of Dr. Beebe, and continued work on the manuscript that will become our project's "first paper".

Dr. J. Robbins, Kiev and Minsk, Thyroid (February 7-15, 2001):

Dr. Robbins participated in the training visit to Belarus and Ukraine from February 7 to 15, 2001. His major emphasis was on clinical matters and was conducted in cooperation with Drs. McConnell, Fink and Greenebaum. The major collaborators in Minsk were Drs. Polyanskaya, Danilova and Drozd, and in Kiev, Drs. Oleynik, Epshtein and Markov. Other participants were Drs. Perevoznikov and Tylypova (the latter from Gomel) in Minsk and Drs. Bolshova and Terekhova in Kiev. In addition, a number of other individuals from the clinical teams in both countries audited the proceedings.

The topics for discussion centered on the Operations Manuals and on the Reporting Forms.

The emphasis was not only on increasing understanding of the Manual and Forms that had been worked on and tentatively accepted before the visit (except for the Endocrine Summary Form), but also to continue efforts to eliminate differences between the UkrAm and BelAm arms of the study. It became apparent that previous efforts to achieve uniform criteria for recommending aspiration biopsy (FNA) of thyroid nodules and for making a diagnosis of autoimmune thyroiditis (AIT) had been successful. After extensive discussion and attempts at compromise some differences and problems remained but none were of major significance. The most important one concerned focal

abnormalities on ultrasonography that the Ukrainians were unwilling to designate as nodules, By agreeing to call them “focal lesions” we assured that they would not be lost from the data base and could be matched with nodules smaller than 5mm recorded by Belarus. Both UkrAm and BelAm resisted classifying a thyroid gland with a nodule but no diffuse enlargement as Grade 0 goiter but this should not be a problem since thyroid volume would be measured by ultrasonography.

The least developed reporting form, the Endocrine Summary, consumed much of our time but reached the point where it could be finalized by email communication. Drs. Robbins and McConnell were able to compose the instructions for this form. One potential difference between the arms that is not part of the Manual or Forms but could lead to bias was in the formalization of clinical management of thyroid nodules not removed surgically. A listing of current clinical practice in these cases was achieved in Minsk but not in Kiev and should receive attention in subsequent visits.

It was apparent that the Manuals and Forms will require further discussion, and that some of the questions raised will require input from the epidemiologists. However, the training visit assured that the current versions can be adequately utilized in the second screening cycle. The regular working visits of the clinical group should be able to handle ongoing questions and problems.

Dr. E. Greenebaum, Minsk, Thyroid (February 10-15, 2001):

Dr. Greenebaum participated in the preparation for retraining for rescreening for 2nd & 3rd screening cycles for Cytologists and Sonographers from Dispensary, Aksakovchina, Oncopathology Center, and Gomel from February 10-15, 2001. Prior to the trip, Dr. Greenebaum thoroughly reviewed the Ukrainian and Belarusian FNA Cytology and Ultrasound forms and operations manuals. On-site review of forms revealed several changes on English version not made on the Russian version forms.

Retraining sessions in Minsk: 15 participants from all BelAM sites. See Appendix E. Dr. Greenebaum presented several lectures with Kodachromes, discussion sessions, and demonstrations concerning: Basic Thyroid Pathology and Cytology, Difficult Areas Of Diagnosis, Immediate

Assessment Of Adequacy of FNA Biopsies, FNA Biopsy Procedure and FNA Smear Preparation Techniques, and Review of Revised Forms and Operations Manual. This format was successful and was recommended for future use.

Digital Imaging: Dr. Vitaly Kliavich (Sonographer) and Dr. Gapanovich (Cytologist at the Dispensary) demonstrated a digital imaging technique using a borrowed projector and CCD camera attached to cytology's microscope, computer and Sonography 's software. Real-time images are displayed on a screen, wall-screen or monitor, for teaching purposes, and stored on MOD disk for permanent record. Images can, be transmitted to USA colleagues for timely consultation, either by E-mail or by satellite, or via MOD disk via postal mail. Dr. Greenebaum strongly supports the purchase of imaging equipment designed for cytopathology.

Slide Review: Dr. Greenebaum conducted slide review of 28 slides, 10 forms, 11 FNA's from 2001 and again found the diagnoses to be accurate without cases of missed cancer. There has been some improvement in the adequacy of FNA specimens. See Appendix F.

Progress: Dr. Greenebaum was pleased with the progress in several areas: Diff Quik staining quality, Immediate assessment being performed routinely at Dispensary (undocumented but will be documented on 2nd screening form), Less damage to Dispensary FNA cases slides from scratching, wiping, etc., Planning of digital image acquisition and selection of equipment, Improved adequacy rates in Dispensary and Aksakovchina although not in Gomel or Oncopathology, A slide projector is now available for our presentations.

Major Recommendations: Institute computerized image archiving system for FNA specimens by purchasing a digitized CCD camera, microscope, computer and software.

Improve adequacy of FNA specimens in Belarus by bringing an experienced sonographer as FNA consultant for hands-on demonstration in all four sites.

Purchase Diff Quik stain, fixative and staining supplies for all four sites (Dispensary, Aksakovchina, Oncopathology, and Gomel). Also, purchase FNA needles of appropriate size for sonographers.

Begin the agreed upon, but never implemented, clinical pathologic meetings as soon as possible and continue twice each quarter. This might help understanding some decisions made at Oncopathology center regarding when to perform surgery versus patient follow-up.

Dr. G R. Howe, Minsk, Leukemia and Thyroid Studies (March 15-17, 2001):

A) Belarus Thyroid Study:

The objective of this trip was to participate in a joint dosimetry/epidemiology meeting in which both countries participated. A number of issues were discussed, in particular, the necessity for estimating thyroid volume for study subjects at the time of their activity measurements in 1986. Various sources of relevant data were identified and plans discussed for analyzing these data and using them for the present study subjects for dose estimation purposes.

The second major issue was discussion of evaluation of the new dosimetry questionnaire. It was agreed that Dr. Luckyanov would take the lead in applying several dose models to a sample of study subjects; these models including both the one based simply on activity measurements, and others which included modification by old and new questionnaire data. These will be applied to a sample of study subjects in both Belarus and Ukraine and an evaluation will then be made as to the possible reduction in systematic and random error by incorporating questionnaire data in the dose estimation procedure.

The opportunity was also used to discuss completing the first round of screening in Belarus. It was agreed that this would be complete by the end of March 2001 and the second screening round will start on the first of April in both Minsk and Gomel. Dr. Stezhko also confirmed that providing access

to the study data to U.S. scientists was a top priority, which he was pursuing with the Minister of Health of Belarus.

B) Ukraine Thyroid Study:

Discussions were held as to the status of data processing and the initiation of the second round of screenings. Data processing for first-round screenings should be complete within a couple of months. Based on two weeks of rescreening, the participation rate appears to be between 90% and 95%. The rate of those recommended for FNA and receiving it is now approximately 80%, and the remaining 20% are being actively pursued.

C) Leukemia Study:

A detailed discussion was held on the methods to be pursued for dosimetry. In particular, it was suggested that interviewers might come from Dr. Chumak's group and be supervised by him. In principle, this seemed an appropriate idea, but the feasibility and logistics remain to be worked out. Interviewing of 50 subjects with EPR doses is well underway, and once the questionnaire has been modified a further 50 subjects will be interviewed.

Collection of data for the leukemia registry is on schedule, and it should be complete by the end of June. The quality of the data appears to be good, though formal quality control using the computer has not yet been conducted. The importance of this task was emphasized and specific plans discussed with the data manager.

Finally, a detailed timetable for the rest of the year was agreed to which, essentially, follows the outline timetable covered in the original protocol.

5. Administrative Activities:

The first quarter of 2001 began with preparations for February training sessions. Lydia Zablotska worked with Ihor Masnyk to obtain necessary letters of invitation and visas. Travel arrangements were coordinated for Columbia participants and materials needed for training were completed,

One January 30th a one-day meeting was held at Columbia of all investigators and consultants who would participate in the training sessions and seminars. Attending this meeting were: G. Howe, D. Burch, L. Zablotska, R. McConnell, D. Fink, E. Greenebaum, T. Thomas, and J. Robbins. On site training was held the first two weeks of February and the sessions were very successful.

L. Zablotska worked with Dr. Thomas to translate the updated Belarusian and Ukrainian Operations Manuals; with Dr. Howe to translate his transparencies for the training sessions; and with Dr. Sohn to translate the slides required for the human subjects lecture and to prepare overhead transparencies, All of the human subject slides (English and Russian) are posted on the Columbia website for public access

Dr. Richard Sohn, Associate Dean for Research Administration for Columbia University, traveled to Kiev and Minsk to teach the human subject class required by the United States Government for all funded projects. Dr. Sohn is responsible for teaching this class at Columbia University and certified that the content of this class conformed to Columbia University requirements for human subject education for all of the attendees. He noted that because he was not familiar with the study he could not determine if additional personnel should also be given this class and suggested that NCI advise Columbia if they determined that any key personnel were missing from the classes. (See Appendix G)

The annual site visit for Year 3 was held at Columbia on March 2, 2001. Present from Columbia were: Geoffrey Howe, Daniel Fink, Robert McConnell, Ellen Greenebaum, Richard Sohn, Sally Hodgson and Lydia Zablotska, and; present from NCI were: Elaine Ron, Gil Beebe, Ihor Masnyk,

Terry Thomas, Sharon Miller and Kathy Stein. The progress and problems of the study were discussed and it was noted the work effort of Columbia had changed significantly to support the changing needs of the Contract.

In presenting their overviews of progress Drs. Greenebaum, McConnell and Fink recommended additional supplies needed to maintain safety and quality in the laboratory. These supplies, safety needles, sharp containers, additional gloves, Diff Quick, etc. have now been approved for purchase and will be shipped to the sites.

Concerns about the format of the NCI 2706 financial reporting form were expressed and K. Stein, S. Miller and S. Hodgson worked during the remainder of this quarter to modify the form to clearly show the status of funds. Additional financial reports to NCI by S. Hodgson to provide more detailed information on expenditures are currently under discussion. It is hoped that an informal purchasing report to NCI on a regular basis providing updated information on the status of purchase orders and shipments to the sites will meet NCI requirements. Attached as Appendices H and I are the permanent equipment inventory prepared by Sally Hodgson during her site visit and the Columbia report to NCI on purchasing.

During the third quarter we plan to prepare for the summer trainees, ship the approved purchases, provide support for the upcoming June meetings and finalize reporting requirements with NCI.

6. Proposed Activities for Next Quarter (April 1-June 30, 2001):

6.1 Activities:

During the quarter a weeklong visit will be paid to Kiev by Drs. Howe and Finch in company with Dr. Thomas of NCI. A short period will be spent with the thyroid study focusing on developing an appropriate data set for analysis from the first round of screening, and assessing progress and problems in the second round of screening, which then should be underway for two months. The

primary focus of the visit, however, will be the leukemia study with a focus on ensuring that appropriate software exists to carry out quality control, checking and editing of the leukemia registry data which should be essentially complete. Detailed plans for the logistics of tracing and interviewing study subjects will also be formulated, and details regarding the nature of the workshop to be held in October of this year should be finalized.

It is anticipated that in June a trip will be made relating primarily to the thyroid study in both Belarus and Ukraine. All Columbia staff and consultants should participate in this visit which will include a side trip to Gomel by the clinical group. The purpose of the trip will be a detailed overall evaluation of the study in both countries, focusing on the identification of problems and their solutions.

A joint dosimetry meeting with epidemiologists from both countries is planned at the same time to take place in Kiev. This will focus on the results of Dr. Luckyanov's work comparing dose estimates based on activity measurements alone, and those modified by questionnaire input. The latter analysis should help to decide on the utility of the new dosimetry questionnaire.

Work will continue on the finalization of record linkage programs, and the software, which will be necessary for examining study data, and conducting preliminary analyses. In addition, a statistical analysis plan will be drawn up for consideration by study scientists. Finally, plans will be drawn up for the pattern of visits in the future to Belarus and Ukraine in order to ensure maximum efficiency of such visits.

6.2 Time Line: January 1-March 31, 2001

| | |
|------------------------|--|
| January 30,200 1 | Training Meeting at Columbia prior to site visit (Howe, Burch, Zablotska, McConnell, Fink, Greenebaum, Thomas, Robbins) |
| February 4-9,2001 | Leukemia Study Review In Kiev (Finch) |
| February 3 - 13, 2001 | Thyroid and Leukemia Site Visits |
| February 5 - 15, 2001 | Throid Training Meetings in Kiev and Minsk (Zablotska) |
| February 7 - 15, 2001 | Thyroid Meetings in Kiev and Minsk (Howe, Fink, MC Connell, Robbins, Sohn) |
| February 10 - 15, 2001 | Thyroid Cytology Review (Greenebaum) |
| March 2,200 1 | Year Three Site Visit (E. Ron, G. Beebe, I. Masnyk, T. Thomas, S. Miller, K. Stein, G. Howe, R. Sohn, S. Hodgson, D. Fink, R. McConnell, E. Greenebaum and L. Zablotska) |
| March 15 - 17, 2001 | Thyroid and Leukemia Meetings in Kiev and Minsk (Howe) |

APPENDIX A

Kiev, Ukraine:

Bolshova, Elena
Lysova, Zoya
Lyutkevich, Alexander
Markov, Valentin
Matyashchuk, Sergey
Naiyda, Yuri

Rakov, Oleg
Savosko, Ivan
Shelkovskiy, Eugeni
Terekhova, Galina
Yavnyuk, Alexander
Zybina, Galina

Minsk, Belarus:

Republican Dispensary

Panchenko, Irina
Perevoznikov, Dimitri

Gomel Dispensary

Gorbachov, Yuri
Moskvechova, Tamara
Tylypova, Marina

APPENDIX B

Current practices in nodule management (Belarus)

1. Administration of L-thyroxine:

- Indications: Nodules that are at least partially solid with diameter > 5 mm.
- Contraindications: Pregnancy, unstable cardiovascular disease, hyperthyroidism, and allergy to thyroid hormone.
 - Dose: Begin at 2.5 mcg/kg/day and adjust after 3 months, aiming for TSH 0.1-0.2 mU/L.
 - Duration: Continue for at least 6 months and discontinue if no evident benefit after 9-24 months.

2. Administration of iodine preparations:

- Indication: Nodules that are simple cysts and, in some cases, solid nodules or ultrasound suspicion of nodules (subjects under age 25 years).
- Contraindication: Allergy to iodine.
- Form and dose: Usually potassium iodide 200 mcg/day.

3. If nodule grows, patient may be sent to surgery after repeat biopsy.

APPENDIX C

THE BELARUS-USA CHERNOBYL THYROID DISEASE COHORT STUDY (CTDCS): CORRELATION OF SERUM THYROGLOBULIN WITH THYROID CANCER, NODULES, AND ULTRASOUND VOLUME, AND WITH URINE IODINE CONCENTRATION.

Ostapenko V', Polyanskaya O¹, Petrenko S¹, Danilova L¹, Drozd V¹, Buglova E¹, Lesnikova N¹, Rzhetski V', Perevoznikov D¹, Tjuricov A', Brill AB³, Fink D³, Greenebaum E³, McConnell RJ³, Robbins J². Clinical Research Institute of Radiation Medicine and Endocrinology, Ministry of Health, Minsk, Belarus¹; NIDDK, National Institutes of Health, Bethesda, MD, USA; Columbia University, New York, NY, USA³.

The value of serum thyroglobulin (TG) in screening for thyroid nodule and cancer following ¹³¹I exposure in an area of moderate iodine deficiency is unknown. The CTDCS has enrolled 39000 Belarusian subjects who were age 0- 18 years at the time of the accident (26 April 1986) and had direct thyroid radioactivity measurements. By 1 April 2001 11200 cohort members had been screened at least once. Serum TG was measured in 9334, including 4671 with no thyroid or laboratory abnormality ("normals"), 53 with cancer (M/F=26/27; all but 1 papillary), 496 with solitary nodules, and 198 with multiple nodules. In normals and in the whole cohort, females had a significantly higher mean TG than males. Compared to normals (11.53±0.20), subjects with cancers (25.34±3.29), solitary nodules (15.57±0.77) and multiple nodules (18.27 11.94) had significantly elevated TG (all values ng/ml, mean±SE, and p<0.001). However, in only 12 of those with cancer (23% of the total) was the TG greater than 2 SD above the mean for normals. Although there was no correlation with nodule number or size for the entire cohort, subjects with solid and mixed nodules > 10 mm diameter had higher TG (23.92±2.25) than those with 5-10 mm nodules (15.32±1.42) and solitary cysts of any size (13.02±1.06). TG concentrations were significantly elevated in subjects with WHO Grade 2 diffuse goiter (32.03±5.30) or those with ultrasound volumes >200% of unexposed age-matched Belarusians (41.52±6.46). Compared to 1874 subjects with normal (100- 199 mcg/L) urine iodine (10.78±0.47), TG was significantly higher in 2562 subjects with urine iodine 50-99 mcg/L (12.01±0.27; p<0.05) and in 3373 with <50 mcg/L (16.88±0.42; p<0.001). Although the average TG was significantly elevated in 45 subjects with cancer (24.98±3.57) and in 475 with solitary nodules (15.08±0.76) who did not have diffuse goiter, we conclude that, in an area of moderate iodine deficiency, serum TG alone is not useful in screening for cancer and nodule formation after ¹³¹I exposure.

APPENDIX D

SERUM THYROGLOBULIN IN SUBJECTS WITH THYROID CANCER, DIFFUSE AND NODULAR GOITER, AND LOW URINE IODINE CONTENT: EXPERIENCE FROM THE UKRAINE-USA CHORNOBYL THYROID PROJECT. Tronko M¹, Bolshova O¹, Epshtein O², Kravchenko V¹, Lysova Z¹, Lyutkevych O¹, Oliynyk V¹, Rakov O¹, Savosko I¹, Terekhova G¹, Brill AB³, Fink D³, Greenebaum E³, McConnell RJ³, Robbins J². Research Institute of Endocrinology and Metabolism, Kiev, Ukraine¹; NIDDK², National Institutes of Health, Rockville, MD, USA; Columbia University, New York, NY, USA³.

Exposure to fallout from the Chomobyl nuclear power plant accident has greatly increased the risk of thyroid cancer and nodular goiter. The combined effect of internal irradiation by radioiodine and environmental iodine deficiency on serum thyroglobulin (TG), a possible marker for thyroid cancer and nodule formation, has not been evaluated. Our Project has enrolled a cohort of 34000 Ukrainians who were 0- 18 years or in utero at the time of the accident (26 April 1986) and who had direct thyroid radioactivity measurements in the next 2 months. Serum TG has been measured in 6379 subjects, including 3959 with normal thyroids ("normals"), 14 with thyroid cancer (M/F=6/8) and 79 with nodular goiter (M/F=29/50). In the normals, mean TG levels were similar in both sexes, while in those with cancer and nodules, females had higher mean TG levels than did males. Compared to normals (20.6 ± 0.3 1), those with thyroid cancer (59.4 ± 8.3) and nodular goiter (37.0 ± 4.4) had significantly elevated TG levels (all values ng/ml; mean \pm SE). Mean TG was also significantly higher than normal in 114 whose serum TSH was above 4 IU/L (50.1 ± 6.28), 126 with WHO Grade2 diffuse goiter (56.3 ± 6.32) and in 185 with an age-specific ultrasound volume > 200% of that of an unexposed Ukrainian population (50.6 ± 4.6). In 180 subjects with mixed diffuse and nodular goiter Grade 2, mean TG level (51.4 ± 4.7) was comparable to those with cancer and diffuse goiter alone. Urine iodine concentration was decreased in 1980/2192 (90%) and was severely decreased <50 mcg/L in 1428/2192 (68%) of the subjects tested. Cohort members with urine iodine content <50 mcg/L had a mean TG (29.1 ± 0.91) almost twice that of those with a normal iodine content of 100-150 mcg/L (15.9 ± 1.35 ; n = 127). We conclude that in a cohort exposed to ¹³¹I, thyroid enlargement apparently resulting from iodine deficiency raises serum TG levels enough to limit its value to predict cancer and nodular goiter formation.

APPENDIX E

Attendees at re-training:

1. Helen Gapanovich - cytologist, Minsk
2. Vitaly Khliavich - ultrasound, Minsk
3. Eduard Shaverda - ultrasound, Minsk
4. Vladimir Samonchik – ultrasound (?Gomel)
5. Dmitry Tarapenko – ultrasound (?Gomel)
6. Tanya Birykova - cytologist
7. Svetlana Vorontsova - Brest
8. Natalia Kozlova – cytologist Aksakovchina
9. Lydia Ladyseva - cytologist
10. Olga Kamysh - cytologist, Gomel
11. Andrey Lyshchik - sonographer, Aksakovshina clinic
12. Valentina Drozd - Aksakovshina clinic.

Plus 2 Cytologists from Viteps, 2 ultrasound technicians from Minsk, and Dr. Khamara, sonographer , Aksakovchina Thursday only.

APPENDIX F

Total cases for fourth quarter (since last review) of 2000: 32 cases, 258 slides.

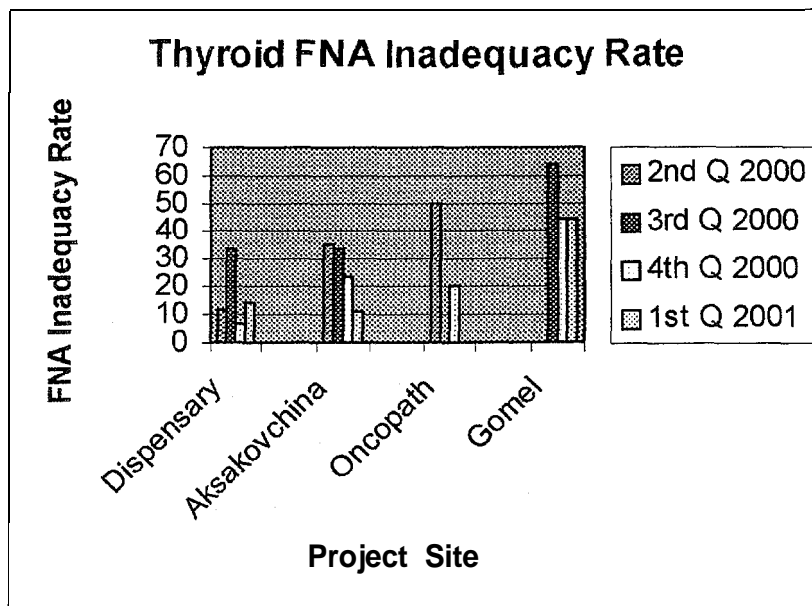
Total cases for first quarter (first 6 weeks only) of 2001: 71 cases, 497 slides.

SUMMARY OF THYROID FNA RESULTS 2000/1 FROM BELAM CYTOLOGIST

| | Minsk | | Aksak | | Oncopath. | | Gomel | |
|---------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | 4 th quarter | 1 st quarter | 4 th quarter | 1 st quarter | 4 th quarter | 1 st quarter | 4 th quarter | 1 st quarter |
| Inadequate | 2 | 2 | 6 | 1 | | | 11 | 4 |
| Benign | 8 | 8 | 17 | 5 | | | 7 | 5 |
| Follicular neoplasm | 6 | 3 | 1 | 1 | | | 1 | 0 |
| Suspicious for ca | 2 | 1 | 2 | 2 | | | 3 | 0 |
| Carcinoma | 5 | 0 | 0 | 0 | | | 0 | 0 |
| Total # of nodules | 23 | 14 | 26 | 9 | | | 22 | 9 |
| Total # of cases | 21 | 13 | 26 | 9 | | | 22 | 7 |
| Total # of slides | 278 | 163 | 129 | 57 | | | 90 | 38 |

The numbers in this table are derived from Dr. Gapanovich's log book; hence, there are some differences from the formal tables in the quarterly report.

The Aksakovchina cases reviewed in these quarters were performed several months earlier. No cases from Oncopathology reviewed in this period.



There has been some improvement in the adequacy of FNA specimens.

APPENDIX G

February 26, 2001

Sharon Miller
Contract Officer
Deputy Chief, ESS, NCAB
National Cancer Institute

Re: N02 CP 77032: Human Subject Protection Education – Belarus and Ukraine

Dear Ms. Miller:

Human subject protection education was conducted in Kyiv, Ukraine (February 9, 2001) and Minsk, Belarus (February 12, 2001). The education consisted of a slide presentation lecture and question and answer period. A copy of the Cyrillic and English slide translations are attached. Approximately 75 – 100 individuals attended the lecture at each site. Dr. Masnyk has a copy of the list of attendees. Dr. Masnyk and Dr. Thomas will have to be asked if they felt that all "the individuals responsible for the design and conduct of the human subjects research" were present. I am not familiar enough with the researchers to make that determination.

We have provided each site with a hard copy of the Cyrillic slides so that they can be distributed to all personnel. I am also arranging for the Cyrillic/English slide presentation (which includes some slides not presented due to time constraints) to be placed on the Columbia Health Sciences Research Administration web site (with appropriate credit to NCI for providing funds for translation). It will then be available for anyone needing to fulfill the education requirement for Cyrillic -reading people.

On another note, Dr. Fink gave a lecture to the clinical laboratory on handling blood and the risks associated with blood-borne pathogens. I think this information is of broader relevance and it is being translated into Cyrillic in Belarus. I would also suggest that copies of this translation be made and widely distributed.

Yours truly,



Richard J. Sohn, Ph.D.
Assoc. Dean for Research Admin., P&S;
Director, Grants and Contracts, HSD

Cc:

Dr. I. Masnyk
Dr. G. Howe
S. Hodgson
L. Zablotska

APPENDIX H

U. S. Funded Equipment Inventory
BelarusThyroid, UkraineThyroid and Ukraine Leukemia Projects

| ID_ | Code for Project | Bar Code I | Description | S e Model a l | N u m b e r | Year | Location | Project | Person |
|-----|------------------|------------|-----------------------------|--------------------|------------------|------|--|------------------|-----------------------|
| 1 | UT | 10001 | Isotemp (steady temp.) | Fisher Sci. | 6257 | | Laboratory of Morphaology of Endocrine Systems | Ukraine Thyroid | Panchenko |
| 2 | UT | 10002 | Isotemp (steady temp.) | Fisher Sci | 6258 | | Laboratory of Morphaology of Endocrine Systems | Ukraine Thyroid | Panchenko |
| 3 | UT | 10003 | Isotemp (steady temp.) | Fisher Sci | 6259 | | Laboratory of Morphaology of Endocrine Systems | Ukraine Thyroid | Panchenko |
| 4 | UT | 10004 | Desktop Computer | Compaq | 8804BPD20099 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 5 | UT | 10005 | Desktop Computer | Compaq | 8804BPD30094 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 6 | UT | 10006 | Desktop Computer | Compaq | 8752BPD32005 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 7 | UT | 10007 | File Server | Compaq | 8805BP10542 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 8 | UT | 10008 | Laptop Computer | Compaq | J808BT52K465 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 9 | UT | 10009 | Printer | Minolta | 0420046035 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 10 | UT | 10010 | Desktop Computer | Compaq | 8804BP03010 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 11 | UT | 10011 | Laptop Computer | Compaq | J8088T52K504 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 12 | UT | 10012 | Scanner | HP-601 OOC | SG81 EI 4082 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 13 | UT | 10013 | Copier | Minolta CS Pro | 21742775 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 14 | UT | 10014 | Desktop Computer | Compaq Deskpro | 8749BPD20174 | | Data Coordinating Center | Ukraine Thyroid | Alexander S. Kostin |
| 15 | UT | 10015 | Ultrasound | TOSBEE | | | Central Laboratory | Ukraine Thyroid | Ephstein |
| 16 | UT | 10016 | VOID | Eschenbach | NOT USA PURCHASE | | | | |
| 17 | UT | 10017 | Immunoassay | EGG Berthold | CU0180169 | | Assay Room-Immunoassay | Ukraine Thyroid | T. F. Zaichenkol |
| 18 | UT | 10018 | Desktop Computer | Deli (Old) | NIH00915409 | | Assay Room-Immunoassay | Ukraine Thyroid | T. F. Zaichenkol |
| 19 | UT | 10019 | Calcium Analyzer (634++/PH) | Chiron Diagnostics | 3545 | | Assay Room-Immunoassay | Ukraine Thyroid | T. F. Zaichenkol |
| 20 | UT | 10020 | Refrigerator | Nord-Soft Line | none | | Administrative Room | Ukraine Thyroid | Room44 |
| 21 | UT | 10021 | Ultrasound | Toshiba SSA | G7582023 | | Ultrasound Room | Ukraine Thyroid | Y. Naida/A.V. Yavnyuk |
| 22 | UT | 10022 | Centrifuge | Beckman CS6 | NGAY07011 | | Laboratory-Assay Room | Ukraine Thyroid | E. Grechichnikova |
| 23 | UT | 10023 | Centrifuge | Beckman CS6 | 2NGAY97K12 | | Mobile Team | Ukraine Thyroid | Y. Naida/A.V. Yavnyuk |
| 24 | UT | 10024 | Bus LAZ-699rd | Lyiv Bus Plant | YOO351261231387 | 2000 | Mobile Team | Ukraine Thyroid | Tronko |
| 25 | UT | 10025 | Desktop Computer | Compaq | 8749BPD20142 | | Administrative Room | Ukraine Thyroid | Room 44 |
| 26 | UT | 10026 | Minolta Copier | CS Pro | 20731432 | | Administrative Room | Ukraine Thyroid | Room 44 |
| 27 | UT | 10027 | Laptop Computer | Toshiba | 77100513E | | Central Laboratory | Ukraine Thyroid | Anatoly Keeps At Home |
| 28 | UT | 10028 | Microscope | Leica | B-071 | | Cytology | Ukraine Thyroid | Dr. Bozhok |
| 29 | UT | 10029 | hold | | | | | | |
| 30 | UL | 10030 | Server | Pro Sigma | | | | Ukraine Leukemia | |
| 31 | UL | 10031 | Desktop Computer | Compaq Desk Pro | 8804BP30092 | | Effects of Radiation Lab | Ukraine Leukemia | B. Ledoshchuk |
| 32 | UL | 10032 | Universal Power Source | Compaq T1000h | 242688002 | | Effects of Radiation Lab | Ukraine Leukemia | B. Ledoshchuk |
| 33 | UL | 10033 | Desktop Computer | Compaq Deskpro | 8804BP30091 | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |
| 34 | UL | 10034 | Desktop Computer | Compaq Deskpro | 8804BP30103 | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |
| 35 | UL | 10035 | Minolta Page ProPrinter | 0420049849 | | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |
| 36 | UL | 10036 | Desktop Computer | Compaq Desk Pro | 8804BPD30101 | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |
| 37 | UL | 10037 | Desktop Computer | Compaq Desk Pro | 8804BPD30093 | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |
| 38 | UL | 10038 | Printer | Minolta Page Pro | 0420049849 | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |

U. S. Funded Equipment Inventory
BelarusThyroid,UkraineThyroid and Ukraine Leukemia Projects

| | | | | | | | | | |
|----|----|-------|-------------------------|-------------------------------|---------------------|------|------------------------------|------------------|----------------------|
| 39 | UL | 10039 | Desktop Computer | Compaq Desk Pro | 8804BPD30095 | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |
| 40 | UL | 10040 | Desktop Computer | Compaq Desk Pro | 8804BPD30106 | | Effects of Radiation Lab | Ukraine Leukemia | Natalie Babkina |
| 41 | UL | 10041 | Desktop Computer | Compaq Desk Pro | 8804BPD30106 | | Effects of Radiation Lab | Ukraine Leukemia | S. Gorodetskaya |
| 42 | UL | 10042 | Server | Pro Sigma | 8805BP210600 | | National Registry of Ukraine | Ukraine Leukemia | Dr. Kartushin |
| 43 | UL | 10043 | Centrifuge | Labofuge 400R | LR 56495 | | Hematology | Ukraine Leukemia | Dr. V. Klimenko, Sr. |
| 44 | UL | 10044 | Slide Stainer | Midas II (Harleco) | 34971427 | | Hematology | Ukraine Leukemia | Dr. V. Klimenko, Sr. |
| 45 | UL | 10045 | Centrifuge | | LR56495 | | Hematology | Ukraine Leukemia | Dr. V. Klimenko, Sr. |
| 46 | UL | 10046 | Microscope | Leica 020-518.000 | 501095/177547 | | Hematology | Ukraine Leukemia | Dr. V. Klimenko, Sr. |
| 47 | UL | 10047 | Refrigerant | Lab-Line | 1297-005 | | Cytogenetics (FISH) | Ukraine Leukemia | S. Dibskiy |
| 48 | UL | 10048 | Co-Incubator | Lab-Line | 0198-0001 | | Cytogenetics (FISH) | Ukraine Leukemia | S. Dibskiy |
| 49 | UL | 10049 | Transformer 100 Watt | ATTO ARS Lamp Control (Zeiss) | 98062881 | | Cytogenetics (FISH) | Ukraine Leukemia | S. Dibskiy |
| 50 | UL | 10050 | Lense Inside Microscope | Thein Zeiss Option | A21 05kop | | Cytogenetics (FISH) | Ukraine Leukemia | S. Dibskiy |
| 51 | UL | 10051 | Centrifuge | Heraeus 400R | 261427 | | Immunocytology Lab | Ukraine Leukemia | D. Bazyka |
| 52 | UL | 10052 | US Pro Printer | Universal | 21742777 | | ask Bebechko | Ukraine Leukemia | Dr. Bebechko |
| 53 | UL | 10053 | Desktop Computer | Compaq | 8804BPD30096 | | Bebechko | Ukraine Leukemia | Dr. Bebechko |
| 54 | UL | 10054 | Desktop Computer | Compaq DeskPro | 8804BPD30104 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 55 | UL | 10055 | Measurement Tool | Gaussmeter | 572EC10 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 56 | UL | 10056 | Resonator | Resonator | ER4108TMH/9503 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 57 | UL | 10057 | Heat Exchanger | ES090 | WI 20B480/0012 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 58 | UL | 10058 | Chromometer | 196ECO | ER2181PG1 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 59 | UL | 10059 | Hard Drive | SCSI FDD | ESP1600SZ/ESP160010 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 60 | UL | 10060 | Sonic Sifter | L3P | A4171 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 61 | UL | 10061 | Ultrasonic Bath | Branson 3510 | EMC9805512F | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 62 | UL | 10062 | Low Speed Saw | Branson 3510 | 531ISF01455 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 63 | UL | 10063 | 2 Column Press | Press | 200094543 | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 64 | UL | 10064 | Computer Laptop | Toshiba | Y8203994R | | Dosimetry (EPR) | Ukraine Leukemia | Dr. Chumak |
| 65 | UL | 10065 | Computer Laptop | Toshiba Portage | 496033309A | | Project Manager | Ukraine Leukemia | Dr. Bazyka |
| 66 | UL | 10066 | CD-Writer | HP Plus | MY004U12B5 | | Project Manager | Ukraine Leukemia | Dr. Bazyka |
| 67 | UL | 10067 | Server | Pro Sigma UT | 8637HUH10335 | | Dosimetry | Ukraine Leukemia | Dr. Chepuray |
| 68 | UL | 10068 | HDD for Server | HDD Seagate 2.10gb | L3387566 | 1996 | Dosimetry | Ukraine Leukemia | Dr. Chepuray |
| 69 | UL | 10069 | Desktop Computer | VIST1100P133 | 510019A00131 | 1996 | Dosimetry | Ukraine Leukemia | Dr. Chepuray |
| 70 | UL | 10070 | Desktop Computer | VIST1100P133 | 610019A00109 | 1996 | Dosimetry | Ukraine Leukemia | Dr. Gerasymenko |
| 71 | UL | 10071 | Desktop Computer | VIST1100P133 | 610500C00289 | 1996 | Dosimetry | Ukraine Leukemia | Dr. Zhygadio |
| 72 | UL | 10072 | Laser Printer | Laser Jet | NLBB010075 | 1996 | Dosimetry | Ukraine Leukemia | Dr. Zhvaadiq |
| 73 | UL | 10073 | Laptop Computer | | Out of Office | 1999 | Dosimetry | Ukraine Leukemia | Dr. V. Shpak |
| 74 | UL | 10074 | Laptop Computer | Sony | Out of Office | | Room 103 | Ukraine Leukemia | Dr. Likhtarev |
| 75 | BT | 10075 | Bus | LAZ695H | 1209335 | 2000 | Mobile Team | Belarus Thyroid | Dr. Stezhko |
| 76 | BT | 10076 | Microscope | Leica | 177540 | | Cytology Laboratory | Belarus Thyroid | Dr. Gaoanovich |
| 77 | BT | 10077 | Copier | Minolta EP70 | 85503658 | | Registry Office | Belarus Thyroid | Dr. Kulagina |
| 78 | BT | 10078 | Desktop Computer | Belsoft | K200512 | 2000 | Registry Office | Belarus Thyroid | Dr. Kulagina |
| 79 | BT | 10079 | Desktop Computer | MBL | 117785 | | Registry Office | Belarus Thyroid | Dr. Kulagina |
| 80 | BT | 10080 | Laser Printer | Laser Jet | C037A | | Registry Office | Belarus Thyroid | Dr. Kulagina |
| 81 | BT | 10081 | Desktop Computer | Compaq Desk Pro | D524GKUD473 | | Endocrinology Station | Belarus Thyroid | Dr. Perevoznikov |

U. S. Funded Equipment Inventory
BelarusThyroid, UkraineThyroid and Ukraine Leukemia Projects

| | | | | | | | | | |
|-----|----|-------|--------------------|----------------------------|----------------|------|--------------------------|-----------------|----------------|
| 82 | BT | 10082 | Ultrasound | Toshiba TOSBEE | 84573708 | | Ultrasound Room | Belarus Thyroid | Dr. Shaverda |
| 83 | BT | 10083 | Magno-Optical Disk | Camtronics | 78923658526 | | Ultrasound Room | Belarus Thyroid | Dr. Shaverda |
| 84 | BT | 10084 | Ultrasound | Toshiba TOSBEE | 5592407 | | Mobile Team | Belarus Thyroid | Dr. Khliavich |
| 85 | BT | 10085 | Laptop Computer | Toshiba | 28067881 | | Mobile Team | Belarus Thyroid | Dr. Khliavich |
| 86 | BT | 10086 | Desktop Computer | Compaq Desk Pro | D525GKUD082 | | Central Laboratory | Belarus Thyroid | Dr. Karpova |
| 87 | BT | 10087 | Calcium Analyzer | Chiron Diagnostics | 35A7 | | Central Laboratory | Belarus Thyroid | Dr. Karpova |
| 88 | BT | 10088 | AutoLumat | EGG Berthold | CU#0180096 | 1999 | Central Laboratory | Belarus Thyroid | Dr. Karpova |
| 89 | BT | 10089 | Urine Analyzer | Milton Roy Spectronic 2000 | none | | Central Laboratory | Belarus Thyroid | Dr. Clemiato |
| 90 | BT | 10090 | Centrifuge | Beekman | 3G2109 | | Blood Collection Station | Belarus Thyroid | Dr. Genderova |
| 91 | BT | 10091 | Desktop Computer | Belsoft | K200513 | 2000 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 92 | BT | 10092 | Desktop Computer | Belsoft | K200511 | 2000 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 93 | BT | 10093 | Desktop Computer | Belsoft | K200514 | 2000 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 94 | BT | 10094 | Server | Dell | JAXMR32423026 | 2000 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 95 | BT | 10095 | Desktop Computer | Compaq Pro Sigma | 8516HHU20135 | 1995 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 96 | BT | 10086 | Server | Compaq 5 | 169116004 | 1995 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 97 | BT | 10097 | Desktop Computer | Compaq Desk Pro XL | 8515HHR60187 | 1995 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 98 | BT | 10098 | Laptop Computer | Compaq | 7523HPN40621 | 1995 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 99 | BT | 10099 | Desktop Computer | ComputerLand | 117784 | 1998 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 100 | BT | 10100 | Copy Machine | Minolta | 21505849 | 1995 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 101 | BT | 10101 | Laser Printer | HP LaserJet simx | ITHC295646 | 1995 | Data Coordinating Center | Belarus Thyroid | Dr. Lesnikova |
| 102 | BT | 10102 | Desktop Computer | Compaq Desk Pro | D524GKU4D339 | 1995 | Epidemiology | Belarus Thyroid | Dr. Boglova |
| 103 | BT | 10103 | Desktop Computer | Compaq Desk Pro | 8449H KAZ21066 | 1996 | Epidemiology | Belarus Thyroid | Dr. Boglova |
| 104 | BT | 10104 | Desktop Computer | ComputerLand | 117783 | 1998 | Epidemiology | Belarus Thyroid | Dr. Boglova |
| 105 | BT | 10105 | Desktop Computer | Compaq | G551 HSK40766 | 1995 | Dosimetry | Belarus Thyroid | Dr. Minenko |
| 106 | BT | 10106 | Desktop Computer | Compaq | 514BA03AQ365 | 1995 | Dosimetry | Belarus Thyroid | Dr. Minenko |
| 107 | BT | 10107 | Laptop Computer | Compaq | 7450HJK30792 | 1995 | Dosimetry | Belarus Thyroid | Dr. Minenko |
| 108 | BT | 10108 | Desktop Computer | IBM 3005L | 06989316 | 1997 | Dosimeter | Belarus Thyroid | Dr. Minenko |
| 109 | BT | 10109 | Laptop Computer | Toshiba | 99078404A | 2000 | Administration | Belarus Thyroid | Dr. Polyanskya |